HACKH'S
CHEMICAL DICTIONARY

[*American and British Usage*]

Containing the Words Generally Used in Chemistry, and Many of the Terms Used in the Related Sciences of Physics, Astrophysics, Mineralogy, Pharmacy, Agriculture, Biology, Medicine, Engineering, etc.

Based on Recent Chemical Literature

FOURTH EDITION

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McGRAW-HILL BOOK COMPANY

New York St. Louis San Francisco Düsseldorf Johannesburg
Kuala Lumpur London Mexico Montreal New Delhi
Panama Rio de Janeiro Singapore Sydney Toronto

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Library of Congress Catalog Card Number 61-18726

07-024064-7

8 9 10 11 - MAMM - 8 4 3 2 1 0

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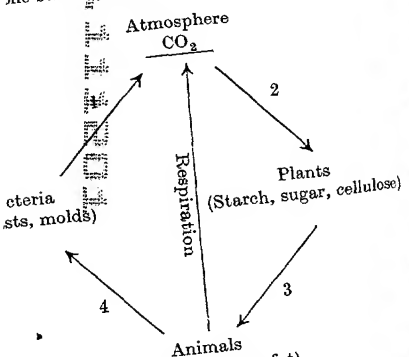
ale of atomic weights of the elements; . Cf. *isotopes*. C. is an element getable and animal life. Its principal but a few compounds of mono-, di-, b c. have been prepared. Its atoms ter affinity for one another than for , and give rise to numerous different mpounds, owing to its valency of 4. ompounds are: carbides, M_xC_y; hydro- H_y; carbon-*x*-ides, C_xH_y; carbonyls, CO^-. C. as minute graphite-like crystallites The loss on ignition of graphite below oint in air. **whetlerized-** C. containing u, to increase its absorbency. Cf. , *gas* c., *charcoal*, *graphite*, *diamond*,

atus. An instrument to determine total ls. **c. atom.** Tetrahedronal c. *asym-* linked to 4 different types of atoms or *primary-* C. having one bond satisfied *uaternary-* C. surrounded by 4 c. atoms. *y-* C. linked to 2 c. atoms. *tertiary-* C. o 3 c. atoms. **c. bisulfide.** C. disulfide. .. Lampblack. **c. bond.** The nonpolar ic linkage between 2 c. atoms. It may be ally neutral, negative, or positive. **c.** An alloy for bearings. **c. chains.** A ion of linked c. atoms in a compound. Aromatic compounds. *open-* Aliphatic unds. **c. compounds.** See *organic com-* . Characteristics: (1) nonpolarity: they do nize; their reactions are molecular and have velocity; (2) polymerism; (3) isomerism and metry; (4) combustibility: all c. atoms are zed to c. dioxide and other products. **c. cycle.** circulation of c. between a living organism he surrounding environments:



(1) *Bacterial action*, (2) *photosynthesis*, (3) *metabolism*, (4) *decay*.

c. dichloride. C_2Cl_4 = 165.84. Ethylene per- chloride. Colorless liquid, b.122. **c. dioxide.** CO_2 = 44.01. Carbonic acid gas, carbonic anhy- dride. Heavy, colorless incombustible gas, d_{air}1.53, m.—65, b.$_{5.3atm}$—56, soluble in water. Shipped as compressed liquid in steel tanks, and used for carbonating beverages, in refrigerators and fire extinguishers, for destruction of vermin, and as a fertilizer. Cf. Dry Ice. **c. disulfide.** CS_2 = 76.13. Colorless liquid with characteristic odor, b.46.2, slightly soluble in water; a local anesthetic, and a solvent for sulfur, iodine, rubber. **c. group.** The fourth group of the periodic system, q.v. **c. hexachloride.** C_2Cl_6 = 236.77. C. *trichloride*, ethyl perchloride, hexachloroethane. Colorless crystals, m.182, b.187, insoluble in water. **c. isotopes.** C. has 5 isotopes of atomic weights 10–14; C^{12} and C^{13} only are stable. C^{13} is used as a tracer element in nutritional work. **c. light.** An electric arc light with C. electrodes. **c. monosulfide.** CS = 44.04. Colorless gas, b.—130, very unstable and polymerizes to a red solid. **c. monoxide.** CO = 28.01. Colorless poisonous gas, b.—190, slightly soluble in water, formed during incomplete combustion of C. **c. oxysulfide.** COS = 60.07. Carbonyl sulfide. Colorless gas, b.50.2, slightly soluble in water, explosive in air. **c. paper.** A tissue paper coated with a mixture of a wax and a black pigment (often c. black); used to make copies of writing. **c. print.** A photographic process for artistic reproductions of negatives. **c. residue.** Conradson c. The amount of c. produced from a lubricating oil heated in a closed crucible under standard conditions. **c. subnitride.** Acetylene dinitrile. **c. suboxide.** O:C.C.C:O = 68.02. A pungent lacrimatory colorless gas, b.7, decomp. by water to malonic acid. **c. subsulfide.** C_3S_2 = 100.0. Red pungent liquid, m.—0.5, polymerized by heat. **c. tetrabromide.** CBr_5 = 331.85. Tetrabromomethane*. Colorless scales, d.3.42, m.92, insoluble in water. **c. tetrachloride.** CCl_4 = 153.84. Tetrachloromethane*, phenoxin, Pyrex. Colorless liquid, b.76, slightly soluble in water. A local anesthetic, fire extinguisher, nonflammable solvent, cleaning agent, (benzene substitute), and reagent. **c. tetrafluoride.** CF_4 = 88.0. Tetrafluoromethane*, fluoromethane, Colorless gas, b.—126, by-product in the manufacture of aluminum from cryolite. **c. tetraiodide.** CI_4 = 519.84. Tetraiodomethane*. Red crystals, $d_{20°}$4.32, decomp. by heat, insoluble in water. **c. trichloride.** Hexachloroethane.

carbonaceous. Containing carbon.

carbonado. Bort. A hard, black cutting diamond.

carbonatation. Formation of carbonates by carbon dioxide. Cf. *carbonation*.

carbonate. A salt of the theoretical carbonic acid, containing the radical CO_3=. Carbonates are readily decomposed by acids. The carbonates of the alkali metals are water-soluble; all others are insoluble. **bi-** Acid c. A salt containing the radical HCO_3—. **chloro-** See *chloro-* c.

c. minerals. Rock-forming minerals; as, calcite, $CaCO_3$; dolomite, $CaMg(CO_3)_2$; magnesite, $MgCO_3$; siderite, $FeCO_3$.

carbonation. (1) Carbonization. (2) The precipitation of lime by carbon dioxide, e.g., in sugar refining. (3) The saturation of water with carbon dioxide, e.g., in soda-water manufacture.

carbonic. A compound containing tetravalent carbon. Cf. *carbonium*.

carbonic acid. (1) HO·COOH. *m*-Carbonic acid, hydroxyformic acid. The hypothetical acid of carbon dioxide and water; known only as its salts (carbonates), acid salts (bicarbonates), amides (carbamic acid) and acid chlorides (carbonyl chloride). (2) An old term for carboxylic acid. **ortho-** $C(OH)_4$. Exists only as compounds, e.g., esters.

c. acid ester. An organic compound in which the H of c. acid is substituted by a radical. *meta-* Compounds of the general formula RO·CO·OR. *ortho-* Compounds of the general formula $C(OR)_4$.

c. acid hydrate. $CO_2·6H_2O$.

carbonic anhydrase. An intracellular enzyme occurring in high concentrations in red-blood corpuscles. It catalyzes the reversal of the reaction $CO_2 + H_2O \rightleftharpoons H_2CO_3$.

carbonic anhydride. Carbonic acid.

carbonic ester. Carbonic acid ester. **ethyl-** $CO(OEt)_2$ = 118.1. *Colorless liquid*, b.126. **ethylene-** $CO(OC_2H_3)_2$ = 114.1. Colorless crystals, m.39. **methyl-** $CO(OMe)_2$ = 90.1. Colorless liquid, b.91. **methylethyl-** EtO·CO·OMe = 104.1. Colorless liquid, b.109. **methylpropyl-** PrO·CO·OMe = 118.1. Colorless liquid, b.131.

carbonic ether. Ethyl carbonate.

carbonide. Carbide.

carboniferous. (1) Containing carbon. (2) Belonging to the coal age; see *geologic era*.

carbonite. (1) Small charcoal briquettes. (2) A high explosive: nitroglycerin 17–30, sodium nitrite 24–30, flour 37–44%.

carbonitrile. Cyanide, *nitrile*. The radical —CN, indicated by the prefix *cyano-*, or the suffix *-nitrile* or *-carbonitrile*.

carbonium. Describing: (1) a compound with divalent or trivalent carbon, associated with chemical color and reactivity; (2) the ion R_3C^+.

carbonization. (1) The transformation of organic matter into charcoal. (2) The distillation of coal, as in gas manufacture. **high temperature-** Heating coal out of air at 1000–1300°C, with the formation of gas, tar, oil, ammonia, and coke. **low temperature-** Heating coal at 450–700°C, with the formation of gas, petroleum (hydrocarbons from pentane to octane, and amylene to octene), and coke.

carbonize. To convert to carbon by charring or burning incompletely.

carbonizer. Concentrated aluminum chloride solution; removes cellulose from wool.

carbonoid. A suggested tetragonal structure of carbon, with 4 faces, one for each valency. Cf. *benzenoid*.

carbonometer. A device to determine the carbonic acid content of blood. Cf. *carbometer*.

carbonoxysulfide. Carbon oxysulfide.

carbon rheostat. An electrical resistance consisting of a number of carbon plates mounted so that pressure can be placed on them by a screw and their total resistance thus altered.

carbonyl. The radical =CO. Cf. *carbonyls*, *thionyl*. **c. amidophenol.** Oxybenzoazole. **c. bromide.** $COBr_2$ = 187.83. Bromophosgene. Poisonous liquid, b.64.5. **c. chloride.** $COCl_2$ = 98.92. Phosgene. Poisonous gas, b.8.2, decomp. by water; an important chemical intermediate, e.g., in the manufacture of polyurethane resins. World production (1960), 10,000 tons. **c. dioxy.** The radical —O·CO·O—. **c. diurea.** $(NH_2·CO·NH)_2·CO$ = 146.06. Triuret. White crystals, m.232, insoluble in water. Cf. *biuret*. **c. hemoglobin.** A highly poisonous combination of carbon monoxide and hemoglobin. **c. pyrrole.** $CO(C_4H_4N)_2$ = 160.1.